

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended) An optical fiber having at least one Bragg grating, the fiber comprising a core surrounded successively by cladding and by a coating, said fiber being obtained by directly writing said grating in the core or ~~and/or~~ the cladding through the coating which is made of a material that is substantially transparent to the ultraviolet ~~type~~ radiation used for writing said grating, in which the material of said coating contains a first polymer network interpenetrated by a second polymer.

2. (original) An optical fiber having at least one Bragg grating according to claim 1, in which said first polymer network is obtained from a first component that is cross-linkable by one of the following cross-linking operations: photocuring and thermocuring.

3. (currently amended) An optical fiber having at least one Bragg grating according to claim 2, in which, when the second polymer forms a second polymer network, said first polymer network is obtained from said first cross-linkable component by a first of said cross-linking operations and the second polymer network is obtained from a second cross-linkable component by a distinct second one of said cross-linking operations.

4. (currently amended) An optical fiber having at least one Bragg grating according to claim 3, in which the first component is a photocurable polymer precursor carrying a photocuring function ~~preferably selected from acrylate, methacrylate, thiol polyene, epoxy, and vinyl ether functions~~, and said second component is a precursor for a thermocurable polymer.

5. (currently amended) An optical fiber having at least one Bragg grating according to claim 1, in which said material is obtained from a liquid mixture comprising 3% to 95% by weight of a precursor of photocurable silicone ~~and preferably 64.5%~~, and 5% to 97% by weight of a precursor of thermocurable silicone, ~~and preferably 35.5%~~.

6. (original) An optical fiber having at least one Bragg grating according to claim 1, in which, when the second polymer forms a second polymer network, said first polymer network is obtained from said first photocurable component by a cationic method and said second polymer network is obtained from a second photocurable component by a radical method.

7. (currently amended) An optical fiber having at least one Bragg grating according to claim 1, in which said second polymer is a thermoplastic ~~preferably selected from polyvinylidene fluorides and copolymers of polyvinylidene fluorides and polyhexafluoropropene~~.

8. (currently amended) An optical device incorporating a fiber having a Bragg grating, the fiber comprising a core surrounded successively by cladding and by a coating, said grating

being obtained by being written directly in the core or ~~and/or~~ the cladding of the fiber through the coating which is made of a material that is substantially transparent to ultraviolet ~~type~~ radiation used for lighting said grating, wherein the material of said coating contains a first polymer network interpenetrated with a second polymer.

9. (new) An optical fiber having at least one Bragg grating according to claim 3, in which the first component is a photocurable polymer precursor carrying a photocuring function selected from acrylate, methacrylate, thiol polyene, epoxy, and vinyl ether functions, and said second component is a precursor for a thermocurable polymer.

10. (new) An optical fiber having at least one Bragg grating according to claim 1, in which said material is obtained from a liquid mixture comprising 64.5% by weight of a precursor of photocurable silicone and 35.5% by weight of a precursor of thermocurable silicon.

11. (new) An optical fiber having at least one Bragg grating according to claim 1, in which said second polymer is a thermoplastic selected from polyvinylidene fluorides and copolymers of polyvinylidene fluorides and polyhexafluoropropene.

12. (new) An optical fiber, comprising:

a core;

a cladding surrounding the core;

a coating surrounding the cladding; and

at least one Bragg grating;

wherein the coating comprises a material that is substantially transparent to the ultraviolet radiation, the material comprising a first polymer network interpenetrated by a second polymer network.

13. (new) The optical fiber according to claim 12, wherein the Bragg grating is directly written in the core or the cladding through the coating.

14. (new) The optical fiber according to claim 12, wherein the first and second polymer networks are intermeshed.

15. (new) The optical fiber according to claim 14, wherein the first and second polymer networks are substantially not crosslinked with each other.

16. (new) The optical fiber according to claim 15, wherein the first polymer network has crosslinked chains and the second polymer network has crosslinked chains.

17. (new) The optical fiber according to claim 15, wherein the first polymer network is a 3-D network.

18. (new) The optical fiber according to claim 12, wherein the first polymer network and the second polymer network are heterogeneous.